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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,968	09/05/2003	Daniel P. Carter	884.467US2	1652
21186	7590	05/03/2005		
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402-0938			EXAMINER KENNY, STEPHEN	
			ART UNIT 3726	PAPER NUMBER
DATE MAILED: 05/03/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/656,968

Applicant(s)

CARTER ET AL.

Examiner

Stephen J Kenny

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/11/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 15, & 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Wagner (US Patent No 6360816).

Wagner discloses forming a heat sink comprising: forming fins of thermally conductive material which extend outwardly from a core (210) in an asymmetrical pattern, the core having a central axis (A) and thermally contacting (210, 216 in Figure 3) the heat source (330), each fin having a tip (246 in Figure 2), wherein a face has a periphery defined by the fin tips, wherein the face is to face a heat generating element (330 see Figure 3), and wherein the face comprises inter-fin openings (i.e. a space between each fin tip).

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 5, 6, 16, 17, 19, 20, 23-24, 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner in view of Mira (US Patent No 5661638).

Wagner discloses the claimed invention except for bending of each fin; separating a portion of the fin from the core.

Mira discloses that the fins (22) have portions that are straight (the portion of fins 22 that terminate at the corners of heat sink 20 in Figure 5) and portions that are bent in substantially the same relative direction (Figure 3). Furthermore Mira discloses separating the bend portion of each fin (22) from the core (24) in that the midpoint of the fin (22) is separated from the core, and bent (Figure 3). The bending of fins is advantageous in that it effectively increases the surface area of each fin, thereby increasing the amount of heat dissipation. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a heat sink as disclosed by Wagner with bent fins so as to increase the efficient transfer of heat.

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Claims 4, 7, 11, 13-14, 18, 21, 25, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner/Mira, as modified above, and further in view of Applicant's Admitted Prior Art (AAPA).

Regarding claims 4, 7, 11, 13-14, 18, 21, 25, 28 Wagner/Mira disclose the claimed invention except for forming a cavity or channel in the core, and inserting a copper plug into the cavity.

AAPA discloses forming a cavity or channel in the core along the central axis (42) (Figure 4); and inserting a copper thermal plug (40) into the cavity (Figure 4).

Regarding claims 8-10, & 12 AAPA discloses that it is well known to fabricate the fins of a heat sink via extrusion (page 7, line 2) which inherently requires a die. Furthermore, the specific aspect ratios & dimensions claimed are considered merely a design choice, and would have been obvious to an artisan of ordinary skill to adjust the ratios to achieve the desired cooling effect for a given application.

The forming of a channel to receive a copper plug is advantageous in that it facilitates conductive heat transfer from the heat source to the fin members wherein convective heat transfer may be performed. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a heat sink as disclosed by Wagner/Mira with the channel/plug assembly and specific ration of extruded fins as taught by AAPA in order to realize these advantages.

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***Response to Arguments***

Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J Kenny whose telephone number is 571-272-4531. The examiner can normally be reached on mon - fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sk S. Kenny



DAVID P. BRYANT  
PRIMARY EXAMINER